

We claim:

1. A tube formed of thermoplastic material for permanent installation as a cooling duct for a resin-encapsulated transformer coil of the type having a conductive material wound in a plurality of layers and encapsulated by a resin, wherein the tube is thermally and electrically compatible with the resin used to encapsulate the transformer coil.

2. The tube of Claim 1, wherein the thermoplastic material is an epoxy resin.

10 3. The tube of Claim 2, wherein the epoxy resin is polyester.

4. A dry-type, resin-encapsulated transformer coil, comprising:

(a) a plurality of layers formed from a length of conductive material;
(b) a plurality of cooling ducts, said cooling ducts formed of thermoplastic material and spaced between the plurality of layers of conductive material; and
(c) a resin encapsulating the plurality of layers of conductive material and surrounding each of the plurality of cooling ducts, wherein the plurality of cooling ducts and the resin-encapsulated layers are thermally and electrically compatible.

20 5. The transformer coil of Claim 4, wherein the thermoplastic material is an epoxy resin.

6. The transformer coil of Claim 5, wherein the epoxy resin is polyester.

25 7. A method of manufacturing a dry-type, resin-encapsulated transformer coil, comprising:

(a) forming a plurality of layers by winding a length of conductive material around a core;
(b) positioning a plurality of thermoplastic cooling ducts between the plurality of layers of conductive material;
(c) encapsulating the plurality of layers of conductive material and surrounding the plurality of cooling ducts with a resin that is thermally and electrically compatible with the thermoplastic cooling ducts; and
(d) curing the resin, wherein the plurality of cooling ducts are integrally formed therein.

8. The method of Claim 7, further comprising the steps of placing inner and outer molds around the coil, before encapsulating the coil and surrounding the plurality of cooling ducts with a resin, to create a volume between said inner mold and outer mold for containing the resin.

5

9. The method of Claim 8, further including the step of placing plugs in the open ends of each of the plurality of cooling ducts before encapsulating the coil and surrounding the plurality of cooling ducts with a resin.

10 10. The method of Claim 9, further including the step of removing the plugs from the ends of each of the plurality of cooling ducts after curing the resin.

11. The method of Claim 8, further including the last step of removing the inner and outer molds.

15